

ON THE RUBBER THRIPS (PHYSOTHRIPS FUNTUMIAE, BAGN.)
AND ITS ALLIES.

By RICHARD S. BAGNALL, F.L.S.

The rubber thrips deserves to be more widely known, not only on account of its economic importance, but because it forms the type of a small group of the genus *Physothrips*, separated at once by the structure of the sternites 3 to 7 in the ♂. In some species the sternites are simple, but in most they are characterised by one well-formed and defined thinly chitinised area in the centre of each, either round, transverse or oviform, generally largish but sometimes reduced to a small puncture-like depression. These male features are found also in other genera. In *P. funtumiae* and its allies however the sternites 3 to 7 have numerous, usually irregular, depressions, smaller or greater, arranged in 2 to 4 more or less regular or defined transverse rows. In one species (*P. funtumiae*) the anterior row of areas is characterised by the possession of a long, transverse, median area; but this is occasionally broken up to a greater or less degree.

I now give tables and figures of the three species falling into this group, from which it will be seen that other features of more than usual interest exist. I would refer chiefly to the antennal antigeny in two species.

Stated briefly we find that the antennae—

- (a) are the same in both sexes, both as regards colour and structure, in *P. marshalli*;
- (b) agree in structure, but differ in colour, in the sexes of *P. funtumiae*;
- (c) agree in colour, but differ in structure, in the sexes of *P. kellyanus*.

Sexual dimorphism in the direction of (b) is quite usual in the Terebrantian Thysanoptera, but in the direction of (c) it is of much rarer occurrence.

In 1915, however, Hood (Proc. Ent. Soc. Washington, xvii, pp. 128-132) characterised the new genus *Plesiothrips* for *Thrips perplexus*, Beach, the discovery of the ♂ illustrating a more extreme case of antennal antigeny than in *P. marshalli*.

I have pleasure in naming the new species in honour of my good friend, Dr. Guy A. K. Marshall, Director of the Imperial Bureau of Entomology.

Table of Females.

1. Fore-wings uniform brown. Fringe of posterior margin of tergite 8 distinct, longish. Chaetotaxy less strong; bristles of pronotum normal. Antennae either similar in the sexes or exhibiting dimorphism in colour. Size smaller.
Hab. Africa 2
- Fore-wings with basal fourth or thereabouts white. Fringe of tergite 8 vestigial, medianly lost. Chaetotaxy stronger; pronotum with a pair of minor setae within the postero-marginal pair. Antennae exhibiting sexual dimorphism in structure. Size larger. *Hab.* Australia *P. kellyanus*.

2. Antennae brown (exhibiting sexual dimorphism in colour). Head and prothorax longer, with longer interocellar and pronotal bristles, those at posterior angles of prothorax being subequal in length. Size larger. On rubber (*Funtumia elastica*) *P. funtumiae*
- Antennae with segment 3 greyish yellow, similar in colour and structure in both sexes. Interocellar and pronotal bristles shorter, the inner of those at posterior angles of prothorax being distinctly longer than the outer. Size smaller. On various plants *P. marshalli*.

Table of Males.

1. Fore-wings uniform brown. Antennae with segment 6 not abnormally developed. Colour not wholly brown 2
- Fore-wings white basally, insect otherwise wholly brown. Segment 6 of antennae exceptionally large, more than twice as long as 5, and four times as long as the style (7+8) *P. kellyanus*.
2. Antennae not coloured as in ♀, intermediate segments varicoloured. Abdominal segments less transverse, with the depressions in sternites 3-7 roughly approximating 4 (sometimes 3) transverse rows, and usually having a longish transverse area, more or less median, in the first row (fig. 2 *b*). Specialised setae on tergite 9 as in fig. 2 *c*, stout *P. funtumiae*.
- Antennae as in ♀. Abdominal segments more strongly transverse, with the depressions in sternites 3-7 arranged in 2 rows and without any transverse area (fig. 1 *b*). Specialised setae on tergite 9 as in fig. 1 *c*, weak *P. marshalli*.

Physothrips marshalli, sp. nov. (fig. 1).

♀. Length, about 1.1 mm.

Colour brown; antenna with the two basal joints brown, joint 3 yellow and 4 to 8 yellowish brown, with extreme bases of 4 and 5 lighter. All tarsi and fore tibiae yellowish, the latter shaded to greyish brown laterally. Fore-wings uniform brown; hind-wings, excepting median vein, lighter.

Head approximately 1.5 times as broad as long; cheeks subparallel, scarcely arched; eyes moderately coarsely faceted, setose, space between them equal to the breadth of an eye; ocelli placed well back, the posterior pair approximating the interior margin of the eyes at about their posterior fourth; inter-ocellar bristles only moderately long, about as long as the breadth of an eye. Other dorsal and lateral setae minute.

Antennae approximate at base, at least 2.6 times as long as the head; form and structure as in fig. 1 *d*, segment 4 being slightly longer than 3. Long forked trichomes on 3 and 4.

Prothorax but slightly longer than the head, about 1.7 times as broad as long; the two bristles at posterior angles rather stout and long, the inner being 0.6 the length of the prothorax and distinctly longer than the outer. Pterothorax broader than the prothorax (1.25 : 1), as long as or slightly longer than broad. Fore-wings 15 to 16 times as long as broad at middle, curved (*i.e.*, sword-shaped); costa with about 27 setae; upper vein with a series of 3+5 setae in the basal two-fifths or thereabouts

and then 2 in the distal seventh; lower vein with a series of 16 to 20 similar setae; all setae not stout and somewhat short. Upper cilia sparing, rather long; lower cilia close, not exceptionally long, minutely wavy. Legs of normal form.

Abdomen of usual form; posterior margin of tergite 8 with a moderately long fringe of microscopic hairs; tergite 9 with a widely spaced pair of dorsal bristles; bristles at posterior angles of segment 8 incurved. Apical bristles moderately strong, long, the longest pair being as long as the length of segments 9 and 10 together.

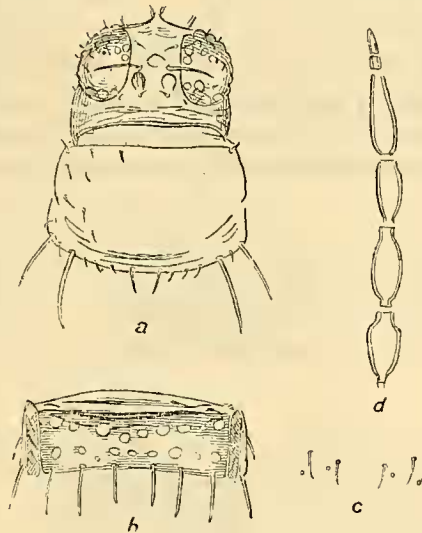


Fig. 1. *Physothrips marshall*, Bagn., sp. n.:
a, head and prothorax of ♀, × c.135;
b, sternite 6 of ♂ showing areas, × c.135;
c, arrangement of special setae on tergite
 9 of ♂, × c.200; *d*, antennal segments 3
 to 8 of ♀, × c.200.

Measurements, approximately:—

Head, length 0.105 mm., width 0.152 mm.; interocellar bristles 0.046 mm. long; pronotum, length 0.115 mm., width 0.195 mm.; pterothorax, length 0.27 mm., width 0.25 mm.; fore-wing, length 0.68; width near middle 0.044 mm., at base 0.064 mm.; abdomen, width at segment 5, 0.3 mm.; length of tergite 5, 0.076 mm.

Antennal segments	..	..	i	ii	iii	iv	v	vi	vii	viii
length (μ)	..	..	26	34	49	54	38	55	10	16
width (μ)	..	..	31	26	22	19	16	17	6	5

Total length of antenna, 0.282 mm.

♂. Length, about 0.8 mm. Colour and structure much the same as in the ♀. Abdominal sternites 3 to 7 with two more or less regular transverse series of irregular roundish pale depressions. Antennae much as in ♀.

Measurements of antennal segments approximately as follows:—

Segments	..	..	..	i	ii	iii	iv	v	vi	vii	viii
length (μ)	..	..	..	23	30	43	45	34	47	8	12
width (μ)	..	..	..	24	23	17	16	15	15	6	4

Tergite 8 with longish fringe; tergite 9 with special dorsal setae weak, disposed as in fig. 1 c.

Types. In British Museum (Imperial Bureau of Entomology).

GOLD COAST: Aburi; apparently common; females only in flowers of *Solanum tuberosum*, and *S. wendlandii*; both sexes, but chiefly females, in flowers of *Ipomoea bona-non*, and both sexes, with the males fairly plentiful in flowers of *Hibiscus sinensis*, *Thunbergia erecta*, *T. laurifolia*, *Strophanthus gratus* and *Canna*, November 1915 (*W. H. Patterson*).

Physothrips funtumiae, Bagn. (fig. 2); *Ann. Mag. Nat. Hist.* (8) xii, 1913, p. 292.

The female of this species approximates 1.5 mm. in length and in its general appearance and chaetotaxy it would seem to have closer relationship with *kellyanus* than with *marshalli*. It is distinguished at once by the stout specialised spines on

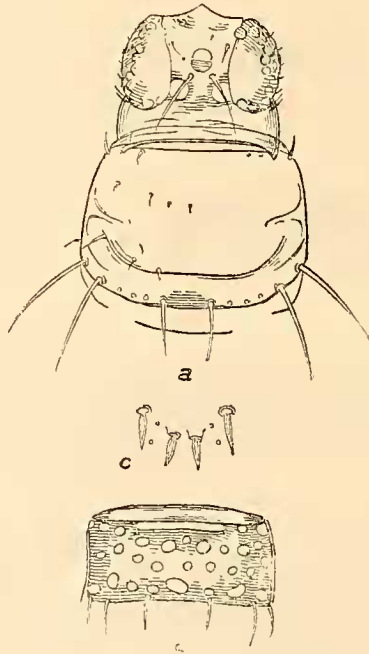


Fig. 2. *Physothrips funtumiae*, Bagn.:
 a, head and prothorax of ♀, × c.135;
 b, sternite 6 of ♂ showing areas, × c.135;
 c, arrangement of special setae on tergite
 9 of ♂, × c.200.

tergite 9 of ♂, and by the depressions on sternites 3 to 7 being disposed in 3 (or more generally 4) more or less regular transverse rows, the uppermost row having, in most cases, a long transverse area medianly in the place of several isolated smaller areas. There is an interesting colour dimorphism or antigeny in the antennae. In the ♀ the antennae are coloured as in *P. kellyanus*, except that segment 3 is of a somewhat yellowish brown, lighter than the succeeding; in the ♂, however, the

antennal segments 3 to 6 are pale yellowish white, 4 to 6 being light grey-brown in their distal halves or thereabouts, and 7 and 8 also grey-brown. Fringe of tergite 8 in ♀ entire, longish; apical abdominal bristles shorter than the length of segments 9 and 10 together.

Measurements approximately:—

♀. Head, length 0.125 mm., width 0.16 mm.; interocellar bristles, length 0.065 mm.; pronotum, length 0.15 mm., width 0.22 mm.; pterothorax, length 0.35 mm., width 0.35 mm.; fore-wing, length 1.0 mm., width near middle 0.067, mm., at base 0.09 mm.; abdomen, width at segment 5, 0.37 mm., length of tergite 5, 0.095 mm.

Antennal segments	iii	iv	v	vi	vii	viii	
length ♀ (μ)	63	57	46	61	12	26
width ♀ (μ)	25	24	18	19	8	6
length ♂ (μ)	55	51	39	56	10	18

Known from Uganda and Southern Nigeria.

Physothrips kellyanus, Bagn. (fig. 3); Ann. Mag. Nat. Hist. (8) xvii, 1916, p. 219.

This species, measuring from 1.6 to 1.8 mm. in the ♀, was described from several examples collected by Mr. R. Kelly in North Queensland on a composite plant (? *Helianthus* sp.) and on a South African plant (*Acokeanthera spectabilis*) in the

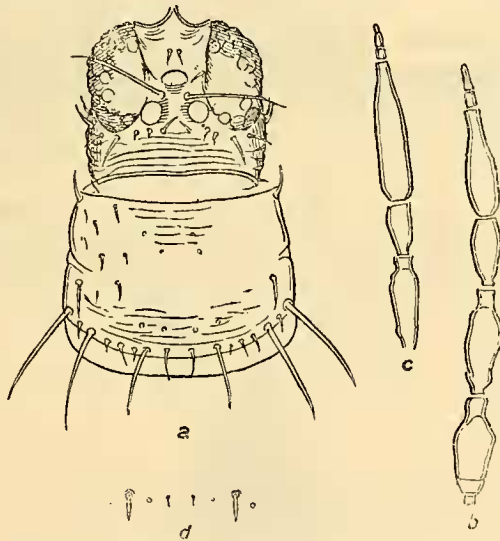


Fig. 3. *Physothrips kellyanus*, Bagn. : *a*, head and prothorax of ♀, \times c. 135; *b*, antennal segments 3 to 8 of ♀, \times c. 200; *c*, antennal segments 4 to 8 of ♂, \times c. 200; *d*, arrangement of special setae on tergite 9 of ♂, \times c. 200.

Brisbane Botanic Gardens. Mr. Kelly also took it in Victoria, on *Hypochoeris radicata*. It differs from the two African species, apart from its larger size, by the stronger chaetotaxy of the head, prothorax, etc.; the presence of a pair of minor setae between the median posterior pair of prothoracic bristles (fig. 3 *a*); the

arrangement of specialised setae on tergite 9 (fig. 3 *d*) and the striking antennal antigeny, the fifth segment in the ♂ being distinctly smaller and the sixth considerably larger than in the ♀.

I amend and augment the original descriptions as follows :—

♀. Antennal segments 3, 4 and 5 narrowly yellowish basally, in addition to the distal constricted parts of 3 and 4 being colourless or faintly yellowish.

Posterior margin of pronotum with the median pair of bristles rather widely separated and having a pair of minor setae within.

Abdomen with fringe on posterior margin of tergite 8 vestigial, altogether absent medianly, and only very short and sparse for a short area at each side. Segment 8 with a widely spaced pair of dorsal bristles. Apical bristles shorter than the length of segments 9 and 10 together.

Measurements approximately :—

Head, length 0.145 mm., width 0.175 mm.; interocellar bristles, length 0.085 mm.; pronotum, length 0.155 mm., width 0.24 mm.; pterothorax, length 0.37 mm., width 0.41 mm.; fore-wing, length 0.95 mm., width near middle, 0.068 mm., at base 0.1 mm.; abdomen, width at segment 5, 0.425 mm., length of tergite 5, 0.095 mm.

Antennal segments	..	..	iii	iv	v	vi	vii	viii
length (μ)	..	..	71	70	46	67	11	16
width (μ)	..	..	28	26	20	20	8	5

♂. The irregular pale areas of sternites 3 to 7 more minute than in either *fundumiae* or *marshalli*, conforming more or less to 3 irregular transverse rows. Colour of antennae as in ♀, but with joint 5 relatively short and 6 abnormally long.

Antennal segments	..	..	iii	iv	v	vi	vii	viii
length (μ)	..	..	64	63	35	90	8	13
